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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/831,460	05/08/2001	Dagobert Michel De Leeuw	PHN 17 732	4381

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EXAMINER
ZACHARIA, RAMSEY E

ART UNIT	PAPER NUMBER
1773	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

A86

Office Action Summary	Application No.	Applicant(s)	
	09/831,460	DE LEEUW ET AL.	
	Examiner	Art Unit	
	Ramsey Zacharia	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 November 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

2. Claims 1-3 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holdcroft et al. (U.S. Patent 5,561,030) in view of Jonas et al. (U.S. Patent 5,766,515).

Holdcroft et al. is directed to electrically conductive polymer patterns and processes for their formation (column 1, lines 10-16). Such electrically conductive polymer patterns have traditionally been used as electrodes (column 2, lines 47-54). The process comprises depositing a film of a π-conjugated polymer, irradiating the film in a pattern, removing the non-irradiated portions, and then oxidizing the film (column 3, lines 51-60). The π-conjugated polymer may be a 3,4-substituted polythiophene, such as a 3,4-alkoxythiophene (column 4, lines 47-59). Dissolved oxygen is involved in initiating the photoreaction, i.e. the dissolved oxygen reads on a photochemical (column 10, lines 44-50). In the embodiment of Example 5, the process is used to form a pattern comprising neighboring tracks that are 2 μm apart (column 12, lines 15-32). Holdcroft et al. apply the polymer film by casting a solution of the polymer in an organic solvent onto the substrate (column 11, lines 8-13).

Holdcroft et al. do not teach that the electrically conductive polymer is a polyacid salt of poly-3,4-alkoxythiophene.

Jonas et al. teach a conductive material comprising a 3,4-dioxyalkylene substituted polythiophene wherein the alkylene group may be a C_{1-4} alkyl group, which includes methylene, ethylene, and propylene, and an organic compound comprising polyhydroxyl, dihydroxy, carbonyl, lactam, and/or amide groups (column 1, lines 25-48). The conductive material is used in areas requiring good electrical conductivity, such as in forming electrodes (column 3, lines 5-15). The conductive material is used in the cationic form so that it may be applied from an aqueous solution (column 2, lines 12-33). A polyacid, such as polystyrene sulfonic acid, may be used as the anion (claim 3).

One of ordinary skill in the art would be motivated to use the anion of a 3,4-dioxyalkylene substituted polythiophene and organic compound as taught by Jonas et al. as the π-conjugated polymer of Holdcroft et al. so that the polymer will be soluble in water as opposed to organic solvents, thus leading to reduce costs associated with environmental regulations regarding the use of organic solvents.

Regarding claim 2, the limitations of this claim are taken to be met at least because it is directed to an optionally present material.

Therefore, the inventions of claims 1-3 and 9-11 would have been obvious to one of ordinary skill in the art at the time the inventions were made.

3. Claims 1, 2, and 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bortscheller et al. (U.S. Patent 4,597,001) in view of Jonas et al. (U.S. Patent 5,766,515).

Bortscheller et al. teach a field effect transistor comprising a gate electrode, a source electrode, and a drain electrode (column 1, lines 45-67). The source and drain electrodes are

formed on an amorphous silicon substrate, i.e. an electrically insulating substrate, and the gate electrode is separated from the source and drain electrodes by an insulating layer (Figure 1 and column 2, lines 30-49). In one embodiment, the source and drain electrodes are fork shaped and interdigitated (Figure 4).

Bortscheller et al. do not teach that the electrodes comprise a polyacid salt of poly-3,4-alkoxythiophene. However, Bortscheller et al. do teach that the gate, source, and drain electrodes may comprise any suitable conductive material (column 2, lines 30-49).

Jonas et al. teach a conductive material comprising a 3,4-dioxyalkylene substituted polythiophene wherein the alkylene group may be a C_{1-4} alkyl group, which includes methylene, ethylene, and propylene, and an organic compound comprising polyhydroxyl, dihydroxy, carbonyl, lactam, and/or amide groups (column 1, lines 25-48). The conductive material is used in areas requiring good electrical conductivity, such as in forming electrodes (column 3, lines 5-15). The conductive material is used in the cationic form so that it may be applied from an aqueous solution (column 2, lines 12-33). A polyacid, such as polystyrene sulfonic acid, may be used as the anion (claim 3).

One of ordinary skill in the art would be motivated to use the 3,4-alkoxythiophene polymer system of Jonas et al. as the conductive material for the electrodes because they can be applied by a simple process and have still have good conductivity (column 1, lines 21-23).

Regarding claim 2, the limitations of this claim are taken to be met at least because it is directed to an optionally present material.

Therefore, the inventions of claims 1, 2, and 4-7 would have been obvious to one of ordinary skill in the art at the time the inventions were made.

4. Claims 1, 2, and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsumura et al. (U.S. Patent 5,500,537) in view of Jonas et al. (U.S. Patent 5,766,515).

Tsumura et al. teach a field effect transistor comprising a substrate (**1**), a gate electrode (**2**), an insulating film (**3**), source (**4**) and drain electrodes (**5**), and an organic film (**6**) (Figure 1 and column 3, lines 4-14). The substrate may be an organic polymer (column 3, lines 15-21). The gate, source, and drain electrodes may be electrically conductive polymers (column 3, lines 22-33). The insulating film may be an organic polymer (column 3, lines 51-61). The organic film is a conductive polymer (column 4, lines 3-22).

Tsumura et al. do not teach that the electrodes comprise a polyacid salt of poly-3,4-alkoxythiophene. However, Tsumura et al. do explicitly teach that the electrodes may comprise electrically conductive polymers.

Jonas et al. teach a conductive material comprising a 3,4-dioxyalkylene substituted polythiophene wherein the alkylene group may be a C_{1-4} alkyl group, which includes methylene, ethylene, and propylene, and an organic compound comprising polyhydroxyl, dihydroxy, carbonyl, lactam, and/or amide groups (column 1, lines 25-48). The conductive material is used in areas requiring good electrical conductivity, such as in forming electrodes (column 3, lines 5-15). The conductive material is used in the cationic form so that it may be applied from an aqueous solution (column 2, lines 12-33). A polyacid, such as polystyrene sulfonic acid, may be used as the anion (claim 3).

One of ordinary skill in the art would be motivated to use the 3,4-alkoxythiophene polymer system of Jonas et al. as the conductive material for the electrodes because they can be applied by a simple process and have still have good conductivity (column 1, lines 21-23).

Regarding claim 2, the limitations of this claim are taken to be met at least because it is directed to an optionally present material.

Therefore, the inventions of claims 1, 2, and 5-8 would have been obvious to one of ordinary skill in the art at the time the inventions were made.

Response to Arguments

5. Applicant's arguments filed 27 November 2002 have been fully considered but they are not persuasive.

The applicants argue that Jonas et al. does not teach or suggest the salt of a poly(3,4-oxygen substituted thiophene or the salt of an anion of a polyacid and a poly-3,4-alkylenedioxythiophene as recited in claims 1 and 9.

This is not persuasive for the following reasons. Jonas et al. is directed to polythiopenes that have been substituted in the 3 and 4 positions with oxygen containing groups (see formula I: column 1, line 30). Jonas et al. further teach using the polythiophenes in cationic form in conjunction with an anion (claim 1 and 3 and column 2, lines 25-33). This is illustrated by the embodiments of Example 1, the composition is a salt of cationic 3,4-polyethylenedioxthiophene and anion polystyrene sulphonic acid.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (703) 305-0503. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau, can be reached on (703) 308-2367. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 for non after-final correspondences and (703) 872-9311 for after-final correspondences.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

REZ

Ramsey Zacharia

1/27/03

Paul Thibodeau
Supervisory Patent Examiner
Technology Center 1700